

No. 741,421.

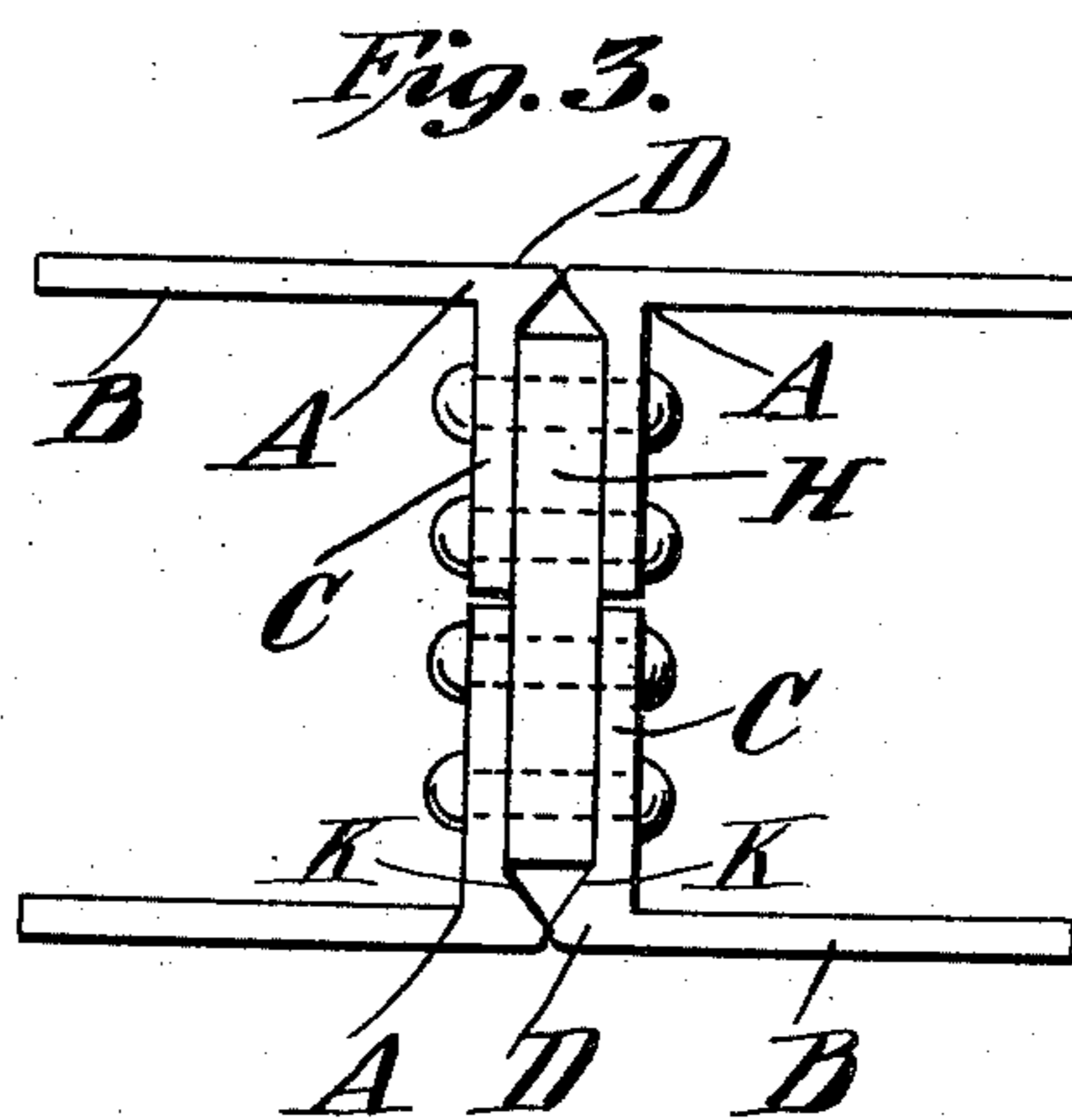
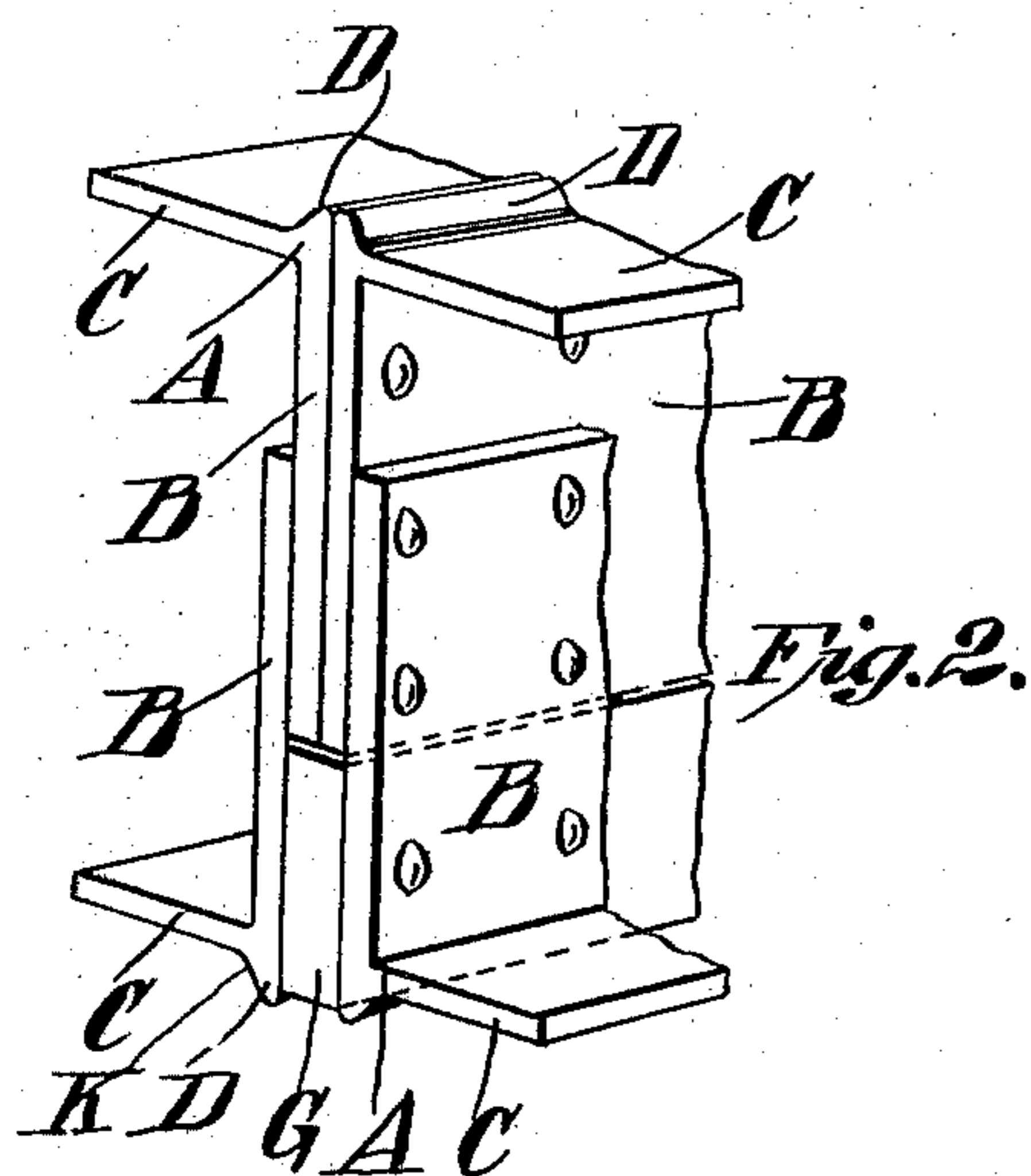
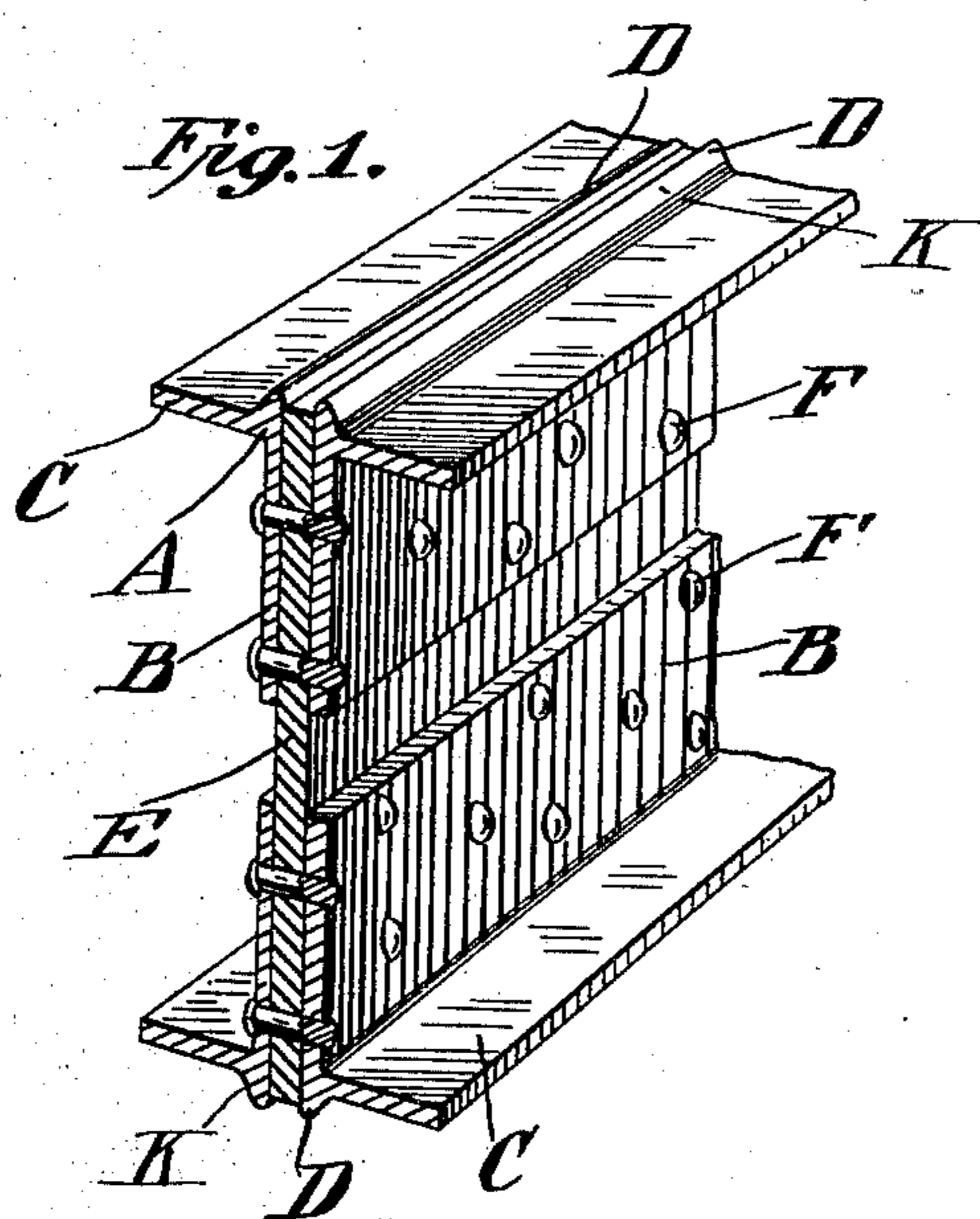
PATENTED OCT. 13, 1903.

G. A. WEBER.

COMPOSITE GIRDER OR THE LIKE.

APPLICATION FILED FEB. 10, 1903.

NO MODEL.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## COMPOSITE GIRDER OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 741,421, dated October 13, 1903.

Application filed February 10, 1903. Serial No. 142,731. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. WEBER, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Composite Girders or the Like, of which the following is a specification accompanied by drawings.

My invention relates to built-up metal structures, but more particularly to composite girders, such as channel-beams and the like.

The objects of my invention are to improve upon the construction of such composite structures and increase their strength with simplicity of parts.

Another object of my invention is to enable the different parts of the structure to be changed, since the girders are formed from interchangeable sections or elements.

Further objects of my invention will hereinafter appear; and to these ends my invention consists of composite structures embodying the features of construction, combinations of elements, and arrangement of parts, substantially as hereinafter fully described and claimed in this specification, and shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a built-up structure in the form of a composite girder embodying my invention. Fig. 2 is a modified form of girder. Fig. 3 is an end view of another modification.

The interchangeable element or section from which my composite structures are built up and formed consists of the angle-plate A, comprising, essentially, the base B and the flange C, arranged substantially at right angles to each other and provided with a rib or strengthening-piece D at the juncture of the two.

In the form of I-beam or girder shown in Fig. 1 the bases of the four angle-plates A are secured against the sides of the central supporting web-plate E. The web of the beam is therefore formed by the plate E, combined with the bases B of the angle-plates. The flanges C of the angle-plates, as shown, extend outwardly from the plate E and form the flanges of the I-beam. The strengthen-

ing-ribs D at the top and bottom aid in strengthening the beam and increase its stiffness and ability to withstand the strains met with in the utilization of beams of this character. The flanges of the angle-plates are suitably secured to the plate E, as shown in this instance, by means of the rivets F.

In Fig. 2 two of the angle-plates are arranged with their bases B back to back and then suitably secured together, as by means of rivets, while the two other angle-plates A are arranged with their bases B against the bases of the angle-plates secured to each other, suitable rivets securing the whole together. A separating or spacing block or bar G is then suitably secured between the two lower angle-plates A, and rivets, as shown, are passed through the separating-block and the bases of the angle-plate. As before, the strengthening-ribs D aid in increasing the stiffness of the beam.

In Fig. 3 the flanges C of the angle-plates are secured to the central web-plate H, while the bases B extend outwardly therefrom to form the flanges of the I-beam, and in this instance the top and bottom of the beam are substantially flat and lie in the same plane, while the strengthening-ribs D increase the stiffness of the beam. Suitable rivets are shown securing the angle-plates to the web-plate H.

It is obvious that many forms of girders may be built up from the elements enumerated, and I am not to be understood as limiting myself to I-beams and box-girders. In all of the forms shown in the drawings and in all cases wherein my improved angle-plate is utilized as an element of the construction increased strength and efficiency will be obtained, together with lightness of parts. According to my construction the different parts of the structures may be transported in sections and built up into the forms desired at the places where they are to be used.

The integral strengthening rib, bead, or fillet D, which is formed at the meeting line of the base and flange, is provided, as shown in the drawings, with a portion K, which is oblique to both parts of the angle and also forms a continuation of the outside face of the

flange C and the adjacent edge of the base B or fillet D. It is intended that the fillet D and oblique portion K shall be of such proportions as to afford all the strength necessary to prevent deflection of the base and flange at their junction.

Obviously some features of my invention may be used without others, and my invention may be embodied in widely-varying forms.

Therefore, without limiting myself to the construction shown and described, I claim, and desire to obtain by Letters Patent, the following:

1. A built-up structure or I-beam, comprising a web-plate and angle-plates secured thereto at each side by rivets or like devices, the angle-plates each having a base, a flange, and a longitudinally-extending strengthening rib or fillet at the juncture between the base and the flange, and arranged adjacent to the web-plate, said rib or fillet being provided with a portion oblique to both the base and flange, and forming a continuation of the outside face of the flange to the edge of the adjacent end of the base, for substantially the purposes set forth.

2. A composite girder, comprising a central web-plate and a plurality of angle-plates suitably secured thereto at opposite sides of the same, the angle-plates each having a base,

a flange, and a longitudinally-extending strengthening rib or fillet at the juncture between the base and the flange, and arranged adjacent the web-plate, said rib or fillet being provided with a portion oblique to both the base and flange, and forming a continuation of the outside face of the flange to the edge of the adjacent end of the base, the bases of the angle-plates being secured to the web-plate while the flanges form the flanges of the girder, for substantially the purposes set forth.

3. A composite structure for an I-beam or girder, comprising a web portion formed in part by a web-plate and in part by the bases of two angle-plates, the flanges of which form the flanges of the structure, with two other angle-plates secured to the web portion of the structure outside of the bases of the two first-named angle-plates to complete the I-beam and form the other flanges thereof, for substantially the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE A. WEBER.

Witnesses:

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